

**REMARKS**

Claims 1-8 are currently pending in the subject application and are presently under consideration. Claims 9-23 are cancelled as directed to a non-elected group, as shown on p. 6 of the Reply. Applicant reserves the right to prosecute these claims in a subsequently-filed divisional application. Amendments to the specification and Abstract are shown at pp. 2-4 of the Reply. Applicant's representative thanks the Examiner for the withdrawal of the Objection to the Previous Reply.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

**I. Objection to the Drawings**

Applicant's representative thanks the Examiner for the withdrawal of the objection to Figs. 1, 2 and 3. However, the objection to Fig. 8 had not been accepted since the entire previously-submitted "Amendment to the Specification" was denied due to a minor informality with respect to the Abstract. It is respectfully submitted that the objection to Fig. 8 is overcome by the subject amendment to the specification. No new matter is presented. Withdrawal of this objection is respectfully requested.

**II. Objection to the Specification**

The objection to the specification made in the previous Office Action is maintained since the previous Reply did not place the Abstract on a separate sheet, and also because it is alleged that the amended Abstract is unclear. A new ground of objection is raised that the Abstract needs to be amended to comport with the cancelled non-elected claims. In response thereto, the previously-submitted Abstract is cancelled and a new Abstract is submitted on a separate sheet herewith that comports with the language of independent claim 1. It is therefore respectfully submitted that the objection is overcome and withdrawal of the same is respectfully requested.

The specification has once again been objected to under 35 U.S.C. § 112, first paragraph for allegedly being "replete with terms which are not clear, concise and exact." It is again respectfully maintained that the Final Action only indicates instances of an editorial rather than a substantive nature. To wit, a minor typographical error is indicated

at page 1, line 8. On page 1, line 26, it is contended that “the resist or lithographic coating” should properly be written as “a resist and a lithographic coating.” On page 1, lines 27-28, it is required that “the surface” be changed to “the coated silicon structure.” These particular instances have been changed as indicated in order to advance prosecution. No new matter has been added. However, Applicant’s representative strongly avers the contention that the original passage was somehow unclear due to these very minor edits. Applicant’s representative further avers the contention that the specification is replete with an unspecified number of unidentified items requiring correction. Applicant has been presented with no guidelines for identifying terminology deemed incorrect, nor are any standards presented to assist Applicant in curing these alleged defects. It had been respectfully requested in the previously-submitted Reply that either a comprehensive list of specific instances be cited, along with a basis for why these would be deemed unacceptable to a person skilled in the art, or else this objection to the specification be withdrawn. In response, the requirement has merely been repeated in the Final Action without further elaboration or qualification. For at least this reason, it is respectfully maintained that the specification is in fact written in “full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same,” in accordance with 35 U.S.C. § 112, first paragraph. Withdrawal of this objection is again respectfully requested.

### **III. Rejection of Claims 1 and 3 Under 35 U.S.C. §102(b)**

Claims 1 and 3 stand rejected under 35 U.S.C. §102(b) as being clearly anticipated by Vasudev *et al.* (WO 94/17450) or Vasudev *et al.* (US 5,411,824). This rejection should be withdrawn for the following reasons. Vasudev *et al.* does not disclose or suggest each and every limitation set forth in the subject claims.

A single prior art reference anticipates a patent claim only if it ***expressly or inherently describes each and every limitation set forth in the patent claim.*** *Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 USPQ2d 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The ***identical invention must be shown in as complete detail as is contained in the ... claim.***

*Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (emphasis added).

Applicant's claimed invention relates to *a mask for a nanoprint lithographic process*. In particular, claim 1 recites a *translucent substrate with one or more three-dimensional features comprising one or more vertical sidewalls*. An absorbing material is deposited upon one or more of the vertical sidewalls so that **light in an incident direction to an upper surface of the substrate** will be absorbed by the absorbing material, **resulting in light blocking features**. One or more horizontal surfaces are formed upon one or more of the three-dimensional features that **allow light rays to exit a lower surface of the substrate unobstructed by the absorbing material**. The Vasudev *et al.* references do not disclose or suggest these novel aspects of the invention as claimed.

The two Vasudev *et al.* documents are counterpart documents relating to the same subject matter and will again henceforth be discussed together. Vasudev *et al.* relates to a phase shifting mask having absorbent sidewalls that reduce edge scattering and thereby improve resolution. Contrary to assertions in the Office Action, the cited document does not disclose the claimed aspects at col. 3, lines 36-41 or col. 4, lines 13-26, let alone anywhere else in the document. Rather, the first cited passage simply describes a prior art conventional phase shifting mask utilizing vertical trenches as phases shifters. The second cited passage states that the:

...mask 30 now includes a light absorbing or attenuating sidewall 31 **to address the scattering problem** noted with the prior art PSM 10 of FIGS. 1A-B. The absorbing/attenuating sidewall 31 is disposed along the vertical ("sidewall") portion of trench 12. The absorbing/attenuating sidewall 31 is formed from a conducting material in order to provide a conducting region to fully absorb or attenuate (partially absorb in order to attenuate) **light rays penetrating the sidewall**. (Emphasis added.)

It is readily apparent that the entirety of the disclosure of Vasudev *et al.* is concerned with preventing internal scattering of light within a phase mask. Additionally, the aforementioned passage continues at col. 4, line 37 to state that "it **prevents or inhibits total internal reflections** and especially for partially coherent illumination, **eliminates the**

‘*waveguiding*’ effects by creating ‘lossy’ sidewalls which suppress resonances on the shifted regions.” This passage makes it clear that the Vasudev *et al.*’s sidewalls are only contemplated for absorbing or attenuating light internal to the phase mask. There is simply no disclosure or suggestion of blocking light *in an incident direction to an upper surface of the substrate* to result in *light blocking features* as claimed. The Final Action contends that the presently claimed “light blocking” features would be inherent in the structure of Vasudev *et al.*, further stating that “Applicants have recognized another advantage that would either inherently or naturally flow from following the teaching or suggestion of the prior art.” However, this contention is incorrect. With Vasudev *et al.* patterning is performed by using an “aerial image” that is projected through a phase shifting mask (PSM) onto a substrate, which improves the intensity of a projected image. The passage at col. 4, line 56 states very clearly that “without the absorbing/attenuating sidewall 31, the prior art PSM 10 results in the difference 42 of the two intensity profiles. This difference can degrade the resolution and/or the depth of focus of the aerial image as well as causing a nonuniformity of linewidth in the printed image.” It is therefore abundantly clear that Vasudev *et al.*’s sidewalls, while bearing a superficial similarity to structure of the claimed invention, are strictly disclosed as improving intensity of a patterned image projected from another source, and do not in themselves contribute in any way to the patterning. Thus, there is no way that Vasudev *et al.*’s sidewalls can be construed as inherently resulting in *light blocking features*, as recited in claim 1. Such an interpretation would lead away from the plain disclosure of this reference and would destroy the disclosed functionality of this device. Contrary to statements in the Final Action, the subject claims in fact clearly point to different structure that is not disclosed or suggested in the Vasudev *et al.* references. Consequently, the cited documents fail to disclose or suggest a mask having *an absorbing material deposited upon one or more of the vertical sidewalls so that light in an incident direction to an upper surface of the substrate will be absorbed by the absorbing material, resulting in light blocking features and one or more horizontal surfaces, formed upon one or more of the three-dimensional features, that allow light rays to exit a lower surface of the substrate unobstructed by the absorbing material*, as recited in amended claim 1. For at least the foregoing reasons, it is readily apparent that the cited document does not disclose or suggest every

aspect of the claimed subject matter. Accordingly, the rejection of independent claim 1 (and claims that depend there from) should be withdrawn.

**IV. Rejection of Claim 2 Under 35 U.S.C. §102(b)**

Claim 2 stands rejected under 35 U.S.C. §102(b) as being anticipated by either of the Vasudev *et al.* documents in view of Grant *et al.* Withdrawal of this rejection is requested for at least the following reasons. Claim 2 depends from independent claim 1. As stated *supra*, neither of the Vasudev *et al.* references disclose or suggest every limitation set forth in the subject independent claim. Even if Grant *et al.* could properly be relied upon as an evidentiary reference as stated in the Final Action, it does not cure the aforementioned deficiencies of the primary reference. Therefore, this rejection should be withdrawn.

**V. Rejection of Claims 4 and 8 Under 35 U.S.C. §103(a)**

Claims 4 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over either of the Vasudev *et al.* documents in view of Hashimoto (US 5,786,114). Withdrawal of this rejection is requested for at least the following reasons. As stated *supra*, neither of the Vasudev *et al.* documents disclose or suggest every limitation set forth in the subject independent claim 1. Therefore, claims 4 and 8, which depend therefrom, are allowable for at least the same reasons. Withdrawal of this rejection is therefore respectfully requested.

**VI. Rejection of Claim 5 Under 35 U.S.C. §103(a)**

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over either of the Vasudev *et al.* documents in view of Takemura (US 5,530,265) or French *et al.* (US 2006/0051974). Withdrawal of this rejection is requested for at least the following reasons. Claim 5 depends from independent claim 1. As stated above, the Vasudev *et al.* documents fail to disclose or suggest every limitation set forth in the subject independent claim. Neither Takemura nor French *et al.* cure the aforementioned deficiencies of these base references. Therefore, this rejection should be withdrawn.

**VII. Rejection of Claim 6 Under 35 U.S.C. §103(a)**

Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over either of the Vasudev *et al.* documents in view of Aggas *et al.* (US 5,944,157) or Aggas *et al.* (US 6,020,590). Withdrawal of this rejection is requested for at least the following reasons. Claim 6 depends from independent claim 1, and as noted *supra*, the Vasudev *et al.* documents do not disclose or suggest every limitation set forth in the subject independent claim. Neither of the Aggas *et al.* documents make up for the deficiencies of the cited reference. For at least these reasons, this rejection should be withdrawn.

**VIII. Rejection of Claim 7 Under 35 U.S.C. §103(a)**

Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over either of the Vasudev *et al.* documents in view of Yeh (US 2003/0193068). Withdrawal of this rejection is requested for at least the following reasons. Claim 7 depends from independent claim 1. The Vasudev *et al.* documents fail to disclose or suggest every limitation set forth in the subject independent claim, as stated *supra*. Yeh fails to cure the aforementioned deficiencies; thus, this rejection should be withdrawn.

**CONCLUSION**

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [AMDP999US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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